

**MOD**

(3) Ship stations, when in communication with a port station, using the techniques and frequencies described in this Appendix may, on an exceptional basis and subject to the agreement of the administration concerned, continue to maintain watch, on the appropriate port operations frequency only, provided that watch on 156.8 MHz is being maintained by the port station (see also Resolution **331 (Rev.WRC-97)**). Such watch by port stations should be indicated in the List of Coast Stations.

**MOD**

(4) Ship stations, when in communication with a coast station in the ship movement service using the techniques and frequencies described in this Appendix, and subject to the agreement of the administrations concerned, may continue to maintain watch on the appropriate ship movement service frequency only, provided the watch on 156.8 MHz is being maintained by the coast station (see also Resolution **331 (Rev.WRC-97)**). Such watch by coast stations in the ship movement service should be indicated in the List of Coast Stations.

APPENDIX S15

NOC

TABLE S15.1

Frequencies below 30 MHz

TABLE S15.2

Frequencies above 30 MHz (VHF/UHF)

NOC

MOD

MOD

Frequency (in MHz)	Description of usage	Notes
*156.8	VHF-CH16	The frequency 156.8 MHz is used for distress and safety communications by radiotelephony (see also Appendix S13). Additionally, the frequency 156.8 MHz may be used by aircraft stations for safety purposes only.
1 530 - 1 544	SAT-COM	In addition to its availability for routine non-safety purposes, the band 1 530 - 1 544 MHz is used for distress and safety purposes in the space-to-Earth direction in the maritime mobile-satellite service. GMDSS distress, urgency and safety communications have priority in this band; see No. S5.353A.
1 626.5 - 1 645.5	SAT-COM	In addition to its availability for routine non-safety purposes, the band 1 626.5 - 1 645.5 MHz is used for distress and safety purposes in the Earth-to-space direction in the maritime mobile-satellite service. GMDSS distress, urgency and safety communications have priority in this band; see No. S5.353A.

MOD

APPENDIX S18

**Table of Transmitting Frequencies in the VHF  
Maritime Mobile Band**

(see Article S52)

*Note:* For assistance in understanding the Table, see notes *a)* to *n)* below.

Channel designator	Notes	Transmitting frequencies (MHz)		Intership	Port operations and ship movement		Public corres- pondence
		Ship Stations	Coast stations		Single frequency	Two frequency	
60		156.025	160.625			x	x
01		156.050	160.650			x	x
61		156.075	160.675			x	x
02		156.100	160.700			x	x
62		156.125	160.725			x	x
03		156.150	160.750			x	x
63		156.175	160.775			x	x
04		156.200	160.800			x	x
64		156.225	160.825			x	x
05		156.250	160.850			x	x
65		156.275	160.875			x	x
06	<i>f)</i>	156.300		x			
66		156.325	160.925			x	x
07		156.350	160.950			x	x
67	<i>h)</i>	156.375	156.375	x	x		
08		156.400		x			
68		156.425	156.425		x		
09	<i>i)</i>	156.450	156.450	x	x		
69		156.475	156.475	x	x		
10	<i>h)</i>	156.500	156.500	x	x		
70	<i>j)</i>	156.525	156.525	Digital selective calling for distress, safety and calling			
11		156.550	156.550		x		

Channel designator	Notes	Transmitting frequencies (MHz)		Intership	Port operations and ship movement		Public correspondence
		Ship Stations	Coast stations		Single frequency	Two frequency	
71		156.575	156.575		x		
12		156.600	156.600		x		
72	i)	156.625		x			
13	k)	156.650	156.650	x	x		
73	h), i)	156.675	156.675	x	x		
14		156.700	156.700		x		
74		156.725	156.725		x		
15	g)	156.750	156.750	x	x		
75	n)	156.775			x		
16		156.800	156.800	DISTRESS, SAFETY AND CALLING			
76	n)	156.825			x		
17	g)	156.850	156.850	x	x		
77		156.875		x			
18	m)	156.900	161.500		x	x	x
78		156.925	161.525			x	x
19		156.950	161.550			x	x
79		156.975	161.575			x	x
20		157.000	161.600			x	x
80		157.025	161.625			x	x
21		157.050	161.650			x	x
81		157.075	161.675			x	x
22		157.100	161.700			x	x
82	m)	157.125	161.725		x	x	x
23		157.150	161.750			x	x
83	m)	157.175	161.775		x	x	x
24		157.200	161.800			x	x
84	m)	157.225	161.825		x	x	x
25		157.250	161.850			x	x

Channel designator	Notes	Transmitting frequencies (MHz)		Intership	Port operations and ship movement		Public correspondence
		Ship Stations	Coast stations		Single frequency	Two frequency	
85	m)	157.275	161.875		x	x	x
26		157.300	161.900			x	x
86	m)	157.325	161.925		x	x	x
27		157.350	161.950			x	x
87		157.375			x		
28		157.400	162.000			x	x
88		157.425			x		
AIS 1	l)	161.975	161.975				
AIS 2	l)	162.025	162.025				

#### NOTES REFERRING TO THE TABLE

##### General notes

- a) Administrations may designate frequencies in the intership, port operations and ship movement services for use by light aircraft and helicopters to communicate with ships or participating coast stations in predominantly maritime support operations under the conditions specified in Nos. S51.69, S51.73, S51.74, S51.75, S51.76, S51.77 and S51.78. However, the use of the channels which are shared with public correspondence shall be subject to prior agreement between interested and affected administrations.
- b) The channels of the present Appendix, with the exception of channels 06, 13, 15, 16, 17, 70, 75 and 76, may also be used for highspeed data and facsimile transmissions, subject to special arrangement between interested and affected administrations.
- c) The channels of the present Appendix, but preferably channel 28 and with the exception of channels 06, 13, 15, 16, 17, 70, 75 and 76, may be used for direct-printing telegraphy and data transmission, subject to special arrangement between interested and affected administrations.
- d) The frequencies in this table may also be used for radiocommunications on inland waterways in accordance with the conditions specified in No. S5.226.

- e)* Administrations having an urgent need to reduce local congestion may apply 12.5 kHz channel interleaving on a non-interference basis to 25 kHz channels, provided:
- 1) Recommendation ITU-R M.1084-2 shall be taken into account when changing to 12.5 kHz channels;
  - 2) it shall not affect the 25 kHz channels of the Appendix **S18** maritime mobile distress and safety frequencies, especially the channels 6, 13, 15, 16, 17, and 70, nor the technical characteristics mentioned in Recommendation ITU-R M.489-2 for these channels;
  - 3) implementation of 12.5 kHz channel interleaving and consequential national requirements shall be subject to prior agreement between the implementing administrations and administrations whose ship stations or services may be affected.

### **Specific notes**

- f)* The frequency 156.300 MHz (channel 06) (see Appendix **S13**, Appendix **S15** and **S51.79**) may also be used for communication between ship stations and aircraft stations engaged in coordinated search and rescue operations. Ship stations shall avoid harmful interference to such communications on channel 06 as well as to communications between aircraft stations, ice-breakers and assisted ships during ice seasons.
- g)* Channels 15 and 17 may also be used for on-board communications provided the effective radiated power does not exceed 1 W, and subject to the national regulations of the administration concerned when these channels are used in its territorial waters.
- h)* Within the European Maritime Area and in Canada these frequencies (channels 10, 67, 73) may also be used, if so required, by the individual administrations concerned, for communication between ship stations, aircraft stations and participating land stations engaged in coordinated search and rescue and anti-pollution operations in local areas, under the conditions specified in Nos. **S51.69**, **S51.73**, **S51.74**, **S51.75**, **S51.76**, **S51.77** and **S51.78**.
- i)* The preferred first three frequencies for the purpose indicated in note *a)* are 156.450 MHz (channel 09), 156.625 MHz (channel 72) and 156.675 MHz (channel 73).
- j)* Channel 70 is to be used exclusively for digital selective calling for distress, safety and calling.
- k)* Channel 13 is designated for use on a world-wide basis as a navigation safety communication channel, primarily for intership navigation safety communications. It may also be used for the ship movement and port operations service subject to the national regulations of the administrations concerned.

- l)* These channels (AIS 1 and AIS 2) will be used for an automatic ship identification and surveillance system capable of providing worldwide operation on high seas, unless other frequencies are designated on a regional basis for this purpose.
- m)* These channels (18 and 82 to 86) may be operated as single frequency channels, subject to special arrangement between interested or affected administrations.
- n)* The use of these channels (75 and 76) should be restricted to navigation-related communications only and all precautions should be taken to avoid harmful interference to channel 16, e.g. by limiting the output power to 1 W or by means geographical separation.

APPENDIX S30 (WRC-97)

**Provisions for All Services and Associated Plans  
for the Broadcasting-Satellite Service in the Frequency  
Bands 11.7 - 12.2 GHz (in Region 3), 11.7 - 12.5 GHz  
(in Region 1) and 12.2 - 12.7 GHz (in Region 2)**

...

ARTICLE 3

**Execution of the Provisions and Associated Plans**

- (MOD) 3.1 The Member States of the Union in Regions 1, 2 and 3 shall adopt, for their broadcasting-satellite space stations<sup>1</sup> operating in the frequency bands referred to in this Appendix, the characteristics specified in the appropriate Regional Plan and the associated provisions.
- (MOD) 3.2 The Member States of the Union shall not change the characteristics specified in the Region 1 and Region 3 Plans or in the Region 2 Plan, or bring into use assignments to broadcasting-satellite space stations or to stations in the other services to which these frequency bands are allocated, except as provided for in the Radio Regulations and the appropriate Articles and Annexes of this Appendix.

---

<sup>1</sup> In Region 2, such stations may also be used for transmissions in the fixed-satellite service (space-to-Earth) in accordance with No. S5.492 of the Radio Regulations.



## ARTICLE 4

### Procedure for Modifications to the Plans

- (MOD)** 4.1 When an administration intends to make a modification<sup>2</sup> to one of the Regional Plans, i.e.:
- a) to modify the characteristics of any of its frequency assignments to a space station<sup>3</sup> in the broadcasting-satellite service which are shown in the appropriate Regional Plan, or for which the procedure in this Article has been successfully applied, whether or not the station has been brought into use; *or*
  - b) to include in the appropriate Regional Plan a new frequency assignment to a space station in the broadcasting-satellite service; *or*
  - c) to cancel a frequency assignment to a space station in the broadcasting-satellite service;

the following procedure shall be applied before any notification of the frequency assignment is made to the Radiocommunication Bureau (see Article 5 of this Appendix);

...

**SUP**

4.3.1.3

**(MOD)**

4.3.1.3 having no frequency assignment in the broadcasting-satellite service in the channel concerned but in whose territory the power flux-density value exceeds the prescribed limit as a result of the proposed modification or having an assignment whose associated service area does not cover the whole of the territory of the administration, and in whose territory outside that service area the power flux-density from the broadcasting-satellite space station subject to this modification exceeds the prescribed limit as a result of the proposed modification; *or*

---

<sup>2</sup> The intention not to employ energy dispersal in accordance with paragraph 3.18 of Annex 5 shall be treated as a modification and thus subject to the appropriate provisions of this Article.

<sup>3</sup> The expression "frequency assignment to a space station", wherever it appears in this Article, shall be understood to refer to a frequency assignment associated with a given orbital position. See also Annex 7 for the orbital limitations.

- (MOD) 4.3.1.4 having a frequency assignment in the band 11.7 - 12.2 GHz in Region 2 or 12.2 - 12.5 GHz in Region 3 to a space station in the fixed-satellite service which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of No. S9.7 of the Radio Regulations, or those of paragraph 7.2.1 of this Appendix;
- (MOD) 4.3.1.5 whose services are considered to be affected.
- ...
- SUP 4.3.3.3
- (MOD) 4.3.3.3 having no frequency assignment in the broadcasting-satellite service in the channel concerned but in whose territory the power flux-density value exceeds the prescribed limit as a result of the proposed modification or having an assignment whose associated service area does not cover the whole of the territory of the administration, and in whose territory outside that service area the power flux-density from the broadcasting-satellite space station subject to this modification exceeds the prescribed limit as a result of the proposed modification; *or*
- (MOD) 4.3.3.4 having a frequency assignment in the band 12.5 - 12.7 GHz in Region 1 or 12.2 - 12.7 GHz in Region 3 to a space station in the fixed-satellite service which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of No. S9.7 of the Radio Regulations or those of paragraph 7.2.1 of this Appendix; *or*
- (MOD) 4.3.3.5 having a frequency assignment to a space station in the broadcasting-satellite service in the band 12.5 - 12.7 GHz in Region 3 with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment and which
- a) is recorded in the Master Register, *or*
  - b) has been coordinated or is being coordinated under the provisions of Resolution 33, *or*
  - c) appears in a Region 3 Plan to be adopted at a future administrative radio conference, taking account of modifications to that Plan which may be introduced in accordance with the Final Acts of the Conference;

(MOD) 4.3.3.6 whose services are considered to be affected.

...

#### **4.5 Master copy of the Plans**

MOD 4.5.1 a) The Bureau shall maintain an up-to-date master copy of the Regions 1 and 3 Plan taking account of the application of the procedure specified in this Article. The Bureau shall publish a document listing the amendments to be made to the Plan as a result of modifications made in accordance with the procedure in this Article.

...

### **ARTICLE 5**

#### **Notification, Examination and Recording in the Master Register of Frequency Assignments to Space Stations in the Broadcasting-Satellite Service**

...

MOD a) with respect to its conformity with the Constitution, the Convention and the relevant provisions of the Radio Regulations (with the exception of those relating to *b*), *c*) and *d*) below);

...

ARTICLE 6

(MOD)

**Coordination, Notification and Recording in the  
Master International Frequency Register of Frequency  
Assignments to Terrestrial Stations Affecting  
Broadcasting-Satellite Frequency Assignments in  
the Frequency Bands 11.7 - 12.2 GHz (in Region 3),  
11.7 - 12.5 GHz (in Region 1) and  
12.2 - 12.7 GHz (in Region 2)<sup>1</sup>**

...

**Section II. Notification Procedure for Frequency Assignments**

(MOD)

6.2.1 Any frequency assignment to a fixed, land or broadcasting station shall be notified to the Radiocommunication Bureau if the use of the frequency concerned is capable of causing harmful interference to the service rendered or to be rendered by a broadcasting-satellite station of any other administration, or if it is desired to obtain international recognition of the use of the frequency<sup>1</sup>.

(MOD)

6.2.2 For this notification, an individual notice for each frequency assignment shall be drawn up as prescribed in Appendix S4, Annexes 1A and 1B to the Radio Regulations, which specifies the basic characteristics to be furnished as required. It is recommended that the notifying administration should also supply the additional data called for in that Appendix, together with such further data as it may consider appropriate.

...

---

<sup>1</sup> These procedures do not replace the procedures prescribed for terrestrial stations in Articles S9 and S11 of the Radio Regulations.

---

<sup>1</sup> The attention of administrations is specifically drawn to the provisions of Section I of this Article.

**Section III. Procedure for the Examination of Notices  
and the Recording of Frequency Assignments  
in the Master Register**

**(MOD)** 6.3.1        Whatever the means of communication, including telegram, by which a notice is transmitted to the Bureau, it shall be considered complete if it contains at least the appropriate basic characteristics specified in Appendix S4, Annexes 1A and 1B to the Radio Regulations.

...

**MOD** 6.3.8 –        with respect to its conformity with the Constitution, the Convention, the relevant provisions of the Radio Regulations and the provisions of this Appendix (with the exception of those relating to the coordination procedure and the probability of harmful interference);

...

**(MOD)** 6.3.34        Any notice of a change in the basic characteristics of an assignment already recorded in the Master Register, as specified in Appendix S4, Annexes 1A and 1B to the Radio Regulations (except those entered in Columns 2c, 3 and 4a of the Master Register), shall be examined by the Bureau in accordance with the provisions of paragraphs 6.3.8 and 6.3.9 and, where appropriate, paragraph 6.3.10 and the provisions of paragraphs 6.3.12 to 6.3.32 inclusive shall be applied. Where the change should be recorded, the original assignment shall be amended according to the notice.

...

## ARTICLE 7

**Procedures for Coordination, Notification and Recording in the Master International Frequency Register of Frequency Assignments to Stations in the Fixed-Satellite Service in the Frequency Bands 11.7 - 12.2 GHz (in Region 2), 12.2 - 12.7 GHz (in Region 3) and 12.5 - 12.7 GHz (in Region 1), When Frequency Assignments to Broadcasting-Satellite Stations in Conformity with the Regions 1 and 3 Plan, or the Region 2 Plan, Respectively, Are Involved<sup>1</sup>**

**Section I. Procedure for the Advance Publication of Information on Planned Fixed-Satellite Systems**

*Publication of Information*

- (MOD) 7.1.1 An administration which intends to establish a fixed-satellite system shall, prior to the procedure described in paragraph 7.2.1, where applicable, send to the Radiocommunication Bureau, not earlier than five years and preferably not later than two years before the date of bringing into service each satellite network of the planned system, the information listed in Appendix S4, Annexes 2A and 2B to the Radio Regulations.

...

*Commencement of Coordination or Notification Procedure*

- (MOD) 7.1.8 In complying with the provisions of paragraphs 7.1.5 and 7.1.6, an administration responsible for a planned fixed-satellite system shall, if necessary, defer its commencement of the coordination procedure of paragraph 7.2.1 or, where this is not applicable, the sending of its notices to the Bureau until five months after the date of the weekly circular containing the information listed in Appendix S4, Annexes 2A and 2B to the Radio Regulations on the relevant satellite network. However, in respect of those administrations with which difficulties have been resolved or which have responded favourably, the coordination procedure, where applicable, may be commenced prior to the expiry of the five months mentioned above.

---

<sup>1</sup> These provisions do not replace the procedures prescribed in Articles S9 and S11 of the Radio Regulations when stations other than those of the broadcasting-satellite service are involved.

## **Section II. Coordination Procedures to Be Applied in Appropriate Cases**

7.2.1 ...

(MOD) For this purpose, the administration seeking agreement shall send to any other such administration the information listed in Appendix S4, Annexes 2A and 2B to the Radio Regulations.

...

(MOD) 7.2.3 An administration seeking coordination under paragraph 7.2.1 shall at the same time send to the Bureau a copy of the request for coordination together with the information listed in Appendix S4, Annexes 2A and 2B to the Radio Regulations and the name(s) of the administration(s) whose agreement is sought. The Bureau shall determine on the basis of Annex 4 which frequency assignments in conformity with the appropriate Regional Plan are considered to be affected. The Bureau shall include the names of those administrations with the information received from the administration seeking coordination and shall publish this information in a special section of its weekly circular, together with a reference to the weekly circular in which details of the satellite system were published in accordance with Section I of this Article. When the weekly circular contains such information, the Bureau shall so inform all administrations by circular telegram.

...

## **Section III. Notification of Frequency Assignments**

...

(MOD) 7.3.3 For any notification under paragraph 7.3.1 or 7.3.2, an individual notice for each frequency assignment shall be drawn up as prescribed in Appendix S4, Annexes 2A and 2B to the Radio Regulations, the various Sections of which specify the basic characteristics to be furnished according to the case. The notifying administration shall furnish such further data as it considers appropriate.

...

**Section IV. Procedure for the Examination of Notices and the  
Recording of Frequency Assignments in the Master Register**

- (MOD)** 7.4.1 Any notice which does not contain at least those basic characteristics specified in Appendix S4, Annexes 2A and 2B to the Radio Regulations shall be returned by the Bureau immediately, by airmail, to the notifying administration with the reasons therefor.
- ...
- MOD** 7.4.5.1 with respect to its conformity with the Constitution, the Convention, the relevant provisions of the Radio Regulations and the provisions of this Appendix (with the exception of those relating to the coordination procedures and the probability of harmful interference);
- ...
- (MOD)** 7.4.12.1 A notice of a change in the basic characteristics of an assignment in the fixed-satellite service already recorded, as specified in Appendix S4, Annexes 2A and 2B to the Radio Regulations (except the name of the station or the name of the locality in which it is situated or the date of bringing into use), shall be examined by the Bureau in conformity with paragraph 7.4.5.1 and, where appropriate, paragraphs 7.4.5.2 and 7.4.5.3, and the provisions of paragraphs 7.4.7 to 7.4.11.3 inclusive shall apply. Where the change should be recorded, the original assignment shall be amended accordingly.
- ...

**ARTICLE 13**

**Interference**

- (MOD)** 13.1 The Member States of the Union shall endeavour to agree on the action required to reduce harmful interference which might be caused by the application of these provisions and the associated Plans.
- ...



## ARTICLE 14

### **Period of Validity of the Provisions and Associated Plans**

...

MOD

14.3 In any event, the provisions and associated Plans shall remain in force until their revision by a competent administrative radio conference convened in accordance with the relevant provisions of the Constitution and Convention in force.

## ANNEX 1

### **Limits for Determining Whether a Service of an Administration is Affected by a Proposed Modification to the Plans or When It is Necessary Under This Appendix to Seek the Agreement of Any Other Administration<sup>1</sup>**

(See Article 4)

...

3. **Limits to the change in the power flux-density to protect the broadcasting-satellite service in Regions 1 and 2 in the band 12.2 - 12.5 GHz and in Region 3 in the band 12.5 - 12.7 GHz**

...

---

<sup>1</sup> With respect to this Annex, except for section 2 and sub-section 8 *b*), the limits relate to the power flux-density which would be obtained assuming free-space propagation conditions.

With respect to sub-section 8 *b*) of this Annex, the limits relate to the power flux-density which would be obtained assuming clear-sky propagation conditions using the method contained in Annex 5.

With respect to section 2 of this Annex, the limit specified relates to the overall equivalent protection margin calculated in accordance with section 2.4.4 of Annex 5.

(MOD)

With respect to paragraph 4.3.3.2 or 4.3.3.5 as appropriate, an administration in Region 1 or 3 shall be considered as being affected if the proposed modification to the Region 2 Plan would result in exceeding the power flux-densities given below, at any point in the service area affected.

...

**4. Limits to the change in the power flux-density to protect the terrestrial services of administrations in Region 2**

(MOD)

With respect to paragraph 4.3.1.3, an administration in Region 2 shall be considered as being affected if the proposed modification to the Regions 1 and 3 Plan would result in exceeding a power flux-density, for any angle of arrival, at any point on its territory, of:

...

**5. Limits to the change in the power flux-density to protect the terrestrial services of administrations in Regions 1 and 3<sup>1</sup>**

(MOD)

With respect to paragraph 4.3.3.3, an administration in Region 1 or 3 shall be considered as being affected if the proposed modification to the Region 2 Plan would result in the following power flux-density limits being exceeded:

...

---

<sup>1</sup> See section 3.18 of Annex 5.

6. **Limits to the change in the power flux-density of assignments in the Regions 1 and 3 Plan to protect the fixed-satellite service (space-to-Earth) in the band 11.7 - 12.2 GHz in Region 2, and of assignments in the Region 2 Plan to protect the fixed-satellite service (space-to-Earth) in the band 12.5 - 12.7 GHz in Region 1 and in the band 12.2 - 12.7 GHz in Region 3**

(MOD)

With respect to paragraph 4.3.1.4, an administration in Region 2 shall be considered as being affected if the proposed modification to the Regions 1 and 3 Plan would result in an increase in the power flux-density on its territory of 0.25 dB or more above that resulting from the frequency assignments in the Regions 1 and 3 Plan at the time of entry into force of the Final Acts<sup>3</sup>.

(MOD)

With respect to paragraph 4.3.3.4, an administration in Region 1 or 3 shall be considered as being affected if the proposed modification to the Region 2 Plan would result in an increase in the power flux-density on its territory of 0.25 dB or more above that resulting from the frequency assignments in the Region 2 Plan at the time of entry into force of the Final Acts<sup>1</sup>.

...

7. **Limits to the change in equivalent noise temperature to protect the fixed-satellite service (Earth-to-space) in Region 1 from modifications to the Region 2 Plan in the band 12.5 - 12.7 GHz**

(MOD)

With respect to paragraph 4.3.3.4, an administration of Region 1 shall be considered as being affected if the proposed modification to the Region 2 Plan would result in:

...

---

<sup>3</sup> Final Acts of the 1977 Conference, which entered into force on 1 January 1979.

---

<sup>1</sup> Final Acts of the 1985 Conference.

**8. Limits to the change in the power flux-density to protect the terrestrial services of other administrations**

*a) In Region 1 or 3:*

**(MOD)**

With respect to paragraph 4.3.1.3, an administration in Region 1 or 3 shall be considered as being affected if the consequence of the proposed modification of an existing assignment in the Regions 1 and 3 Plan is to increase the power flux-density arriving on any part of the territory of that administration by more than 0.25 dB over that resulting from that frequency assignment in the Regions 1 and 3 Plan at the time of entry into force of the Final Acts<sup>2</sup>. The same administration shall be considered as not being affected if the value of the power flux-density anywhere in its territory does not exceed the limits expressed in sections 5 a) and 5 b) of this Annex applied to the frequency range 11.7 - 12.5 GHz.

**(MOD)**

With respect to paragraph 4.3.1.3 in the case of an addition of a new assignment to the Regions 1 and 3 Plan, an administration in Region 1 or 3 is considered as being affected if the power flux-density on any part of its territory exceeds the limit expressed in sections 5 a) and 5 b) of this Annex applied to the frequency range 11.7 - 12.5 GHz.

*b) In Region 2:*

**(MOD)**

With respect to paragraph 4.3.3.3, an administration in Region 2 shall be considered as being affected if the consequence of the proposed modification to an existing assignment in the Region 2 Plan is to increase the power flux-density arriving on any part of the territory of that administration by more than 0.25 dB over that resulting from that frequency assignment in the Region 2 Plan at the time of entry into force of the Final Acts<sup>1</sup>. The same administration shall be considered as not being affected if the value of the power flux-density anywhere in its territory does not exceed the following limit: -115 dB(W/m<sup>2</sup>).

**(MOD)**

With respect to paragraph 4.3.3.3 in the case of an addition of a new assignment to the Region 2 Plan, an administration in Region 2 is considered as being affected if the power flux-density on any part of its territory exceeds -115 dB(W/m<sup>2</sup>).

---

<sup>2</sup> Final Acts of the 1977 Conference, which entered into force on 1 January 1979.

---

<sup>1</sup> Final Acts of the 1985 Conference.

Wanted service <sup>1</sup>	Wanted signal <sup>1</sup>	Interfering service <sup>1</sup>	Interfering signal <sup>1</sup>	Protection requirements <sup>2</sup>	
				Total acceptable <sup>3</sup>	Single entry
BSS	TV/FM	BSS, FSS, FS, BS	TV/FM	$C/I = 30 \text{ dB}^{4,7}$	$C/I = 35 \text{ dB}^4$
FSS	FDM/FM	BSS	TV/FM	$N = 500 \text{ pW0p}^8$	$N = 300 \text{ pW0p}$
FSS	TV/FM	BSS, FSS	TV/FM	$C/I = 32 \text{ dB}^5$	$C/I = 37 \text{ dB}^5$
FSS	4 $\phi$ -PSK	BSS, FSS	TV/FM	$C/I = 30 \text{ dB}$	$C/I = 35 \text{ dB}$
FSS	FDM/FM	FSS	FDM/FM	$N = 1000 \text{ pW0p}$	$N = 400 \text{ pW0p}$
FS	FDM/FM	BSS	TV/FM	$N = 1000 \text{ pW0p}$	$-125 \text{ dB(W/m}^2/4 \text{ kHz)}^6$
BS	TV/VSF	BSS	TV/FM	$C/I = 50 \text{ dB}$	not applicable

NOTES: <sup>1</sup> BSS = broadcasting-satellite service FM = frequency modulation  
FSS = fixed-satellite service FDM = frequency division multiplex  
BS = broadcasting service 4 $\phi$ -PSK = four-level phase shift keying  
FS = fixed service VSB = vestigial sideband.  
TV = television

<sup>2</sup> These limits include both up-link and down-link contributions.

<sup>3</sup> Values in dB are protection ratios for the sum of interfering signals. Values in pW0p represent interference noise in the worst telephone channels caused by the sum of interfering signals.

<sup>4</sup> For BSS satellites located at the interfaces of the Regions 1 and 3 Plan and the Region 2 Plan, the  $C/I$  ratios should be 1 dB higher.

<sup>5</sup> See ITU-R Recommendation S.483-2.

<sup>6</sup> This value may be suitably modified for tropical regions to take account of rain attenuation. Allowance may also be made for polarization discrimination.

<sup>7</sup>  $C/I$  = ratio of carrier-to-interfering signal.

<sup>8</sup>  $N$  = noise power.

- 1.6 ...
- (MOD) b) quality of the wanted service (grade 4.5)<sup>1</sup>;  
...

**2. Reference antenna diameter for a fixed-satellite earth station to be used in calculating interference from space stations in the broadcasting-satellite service**

- (MOD) 2.1 For antennas larger than  $100 \lambda$  (2.5 m) in the fixed-satellite service, the gain of the side-lobes is given by the expression  $32 - 25 \log \theta$ , where  $\theta$  is the angle from the boresight (ITU-R Recommendation S.465-5). The side-lobe gain is independent of antenna diameter.  
...

---

<sup>1</sup> Impairment grade on a 5-point scale as defined in ITU-R Recommendation BT.500-7.

ANNEX 2

(to Appendix 30 (S30))

**Basic Characteristics to Be Furnished in  
Notices<sup>2</sup> Relating to Space Stations in  
the Broadcasting-Satellite Service<sup>3</sup>**

- (MOD)** 1. Country and BR number in the case of Regions 1 and 3; country and beam identification in the case of Region 2.
- (NOC)** 2. Nominal orbital position (in degrees from the Greenwich meridian) in the case of Regions 1 and 3; orbital position (xxx.xx degrees from the Greenwich meridian) in the case of Region 2.
- (MOD)** 3. Assigned frequency.
- (ADD)** 4. Assigned frequency band.
- (NOC)** 5. Date of bringing into use.
- (NOC)** 6. Identity of the space station.
- (MOD)** 7. Service area identified by:
  - (MOD)** a) a set of a maximum of twenty test points, and
  - (ADD)** b) a service-area contour on the surface of the Earth or a service area defined by a minimum elevation angle in degrees, and
  - (ADD)** c) the name of other administration(s) (country/territory symbols) included in the service area.
- (NOC)** 8. Geographical coordinates of the intersection of the antenna beam axis with the Earth.
- (NOC)** 9. Class of station.
- (NOC)** 10. Class of emission and necessary bandwidth.

---

**(NOC)** <sup>2</sup> The Bureau shall develop and keep up to date forms of notice to meet fully the statutory provisions of this Annex.

**(MOD)** <sup>3</sup> In Region 2, only those notices relating to frequency assignments for space stations used for telemetry and tracking purposes associated with the Region 2 Plan shall be furnished in accordance with Appendix S4 Annexes 2A and 2B to the Radio Regulations.

- (MOD) 11. Power supplied to the antenna (dBW) and maximum power density per Hz supplied to the antenna (dB(W/Hz)), averaged over the worst 5 MHz, 4 kHz and 27 MHz, as well as averaged over the worst 40 kHz in the case of Region 2.
- (NOC) 12. Space station transmitting antenna characteristics:
- (MOD) a) co-polar gain of the antenna in the direction of maximum radiation referred to an isotropic radiator (dBi), as well as the cross-polar gain of the antenna in the case of a beam of other than elliptical shape;
- (NOC) b) pointing accuracy;
- (NOC) c) type of polarization;
- (MOD) d) sense of polarization, and, in the case of a linear polarization, the angle (in degrees) measured counter-clockwise in a plane normal to the beam axis from the equatorial plane to the electric vector of the wave as seen from the satellite in the direction of the nominal boresight or aim point as defined under item 8 above;
- (MOD) e) for elliptical beams<sup>5</sup> indicate the following:
- (NOC) – co-polar and cross-polar radiation patterns;
- (NOC) – rotation accuracy;
- (NOC) – orientation;
- (NOC) – major axis (degrees) at the half-power beamwidth;
- (NOC) – minor axis (degrees) at the half-power beamwidth;
- (MOD) f) for beams of other than elliptical shape, indicate the following:
- (NOC) – co-polar and cross-polar gain contours plotted on a map of the Earth's surface, preferably in a radial projection from the satellite onto a plane perpendicular to the line from the centre of the Earth to the satellite. The isotropic or absolute gain shall be indicated at each contour which corresponds to a decrease in gain of 2, 4, 6, 10 and 20 dB and thereafter at 10 dB intervals down to a value of 0 dB relative to an isotropic radiator;
- (NOC) – wherever practicable, a numerical equation or table providing the necessary information to allow the gain contours to be plotted.
- (NOC) 13. Station-keeping accuracy.

---

(ADD) <sup>5</sup> A circular beam is considered as a particular elliptical beam where major and minor axes are equal and where major axis orientation and rotational accuracy are equal to 0°.



- (NOC)** 14. Modulation characteristics:
  - (NOC)** a) type of modulation;
  - (NOC)** b) pre-emphasis characteristics;
  - (NOC)** c) TV standard;
  - (NOC)** d) sound-broadcasting characteristics;
  - (NOC)** e) frequency deviation;
  - (NOC)** f) composition of the baseband;
  - (NOC)** g) type of multiplexing of the video and sound signals;
  - (NOC)** h) energy dispersal characteristics;
  - (ADD)** i) in the case of a digital modulation, the effective and transmitted bit/symbol rates.
- (NOC)** 15. Minimum angle of elevation in the service area in the case of Regions 1 and 3.
- (MOD)** 16. Receiving antenna characteristics of the earth station:
  - (ADD)** a) isotropic gain (dBi) of the antenna in the direction of maximum radiation;
  - (ADD)** b) beamwidth in degrees between the half-power points (describe in detail if not symmetrical);
  - (ADD)** c) either the measured co-polar and cross-polar radiation patterns of the antenna (taking as a reference the direction of maximum radiation) or the reference co-polar and cross-polar radiation patterns;
  - (ADD)** d) equivalent diameter of the antenna (metres);
  - (NOC)** e) type of reception (individual or community) in the case of Regions 1 and 3.
- (NOC)** 17. Regular hours of operation (UTC).
- (NOC)** 18. Coordination.
- (NOC)** 19. Agreements.
- (NOC)** 20. Other information.
- (MOD)** 21. Operating administration or agency.
- (ADD)** 22. Connection between Earth-to-space and space-to-Earth frequencies in the network in the case of Region 2.
- (ADD)** 23. Description of the group(s) required in the case of non-simultaneous emissions.